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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,138	12/27/2001	Choon-Seng Tan	P01-3977	1621

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EXAMINER

VU, TRISHA U

ART UNIT PAPER NUMBER

2112

DATE MAILED: 10/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,138

Applicant(s)

TAN ET AL.

Examiner

Trisha U. Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-13 and 21-23 is/are allowed.
- 6) ☒ Claim(s) 1-3, 14, 20, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) 4-8, 15-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-25 are presented for examination.

Response to Arguments

2. Applicant's arguments regarding the *host bus functions as an inter controller link between controllers* (pages 12-17) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new ground(s) of rejection (for claims 1-3, 14, 20, 24 and 25) is made in view of another embodiment taught by DeKoning et al. (US Patent 5,975,738).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 14, 24 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by DeKoning et al. (5,975,738) (hereinafter DeKoning).

As to claim 1, DeKoning teaches data array system for providing a host computer device having a host bus redundant access to a data storage device, comprising: an active controller (e.g. RDAC#1 or RDAC#2) linked to the host bus (154) and the data storage device (disk array 108), the active controller including a messaging mechanism (CPU 112 and associated circuitry) for transmitting the messages and data over the host bus;

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and a standby controller (e.g. RDAC#2) linked to the host bus and the data storage device, the standby controller including message and data buffers (e.g. memory 114/116) for storing the messages and data, whereby the host bus functions as an inter-controller-link (Figs. 1, 3 and col. 6 lines 9-67).

As to claim 14, DeKoning teaches a data storage system with redundant data storage, comprising: a host processor (e.g. in host 120); an active controller (118.1) controlling access by the host computer device to data storage devices (108); a standby controller (118.2) controlling access by the host computer device to the data storage devices; and a host bus (share bus 154) communicatively linking the host processor, the active controller, and the standby controller, wherein the active and standby controllers include redundancy messaging mechanisms configured to assert and sample signals on the host bus to provide inter-controller communications over the host bus (Figs. 1, 3 and col. 6 lines 9-67).

As to claim 24, DeKoning teaches a computing device comprising: a host central processing unit (CPU) (e.g. in host 120); a host bus (154) communicatively coupled to the host CPU; at least one data storage device (108); an active controller (118.1) linked to the host bus and the at least one data storage device (Fig. 1), the active controller including a messaging mechanism (CPU 112 and associated circuitry) for transmitting the messages and data over the host bus; and a standby controller (118.2) linked to the host bus and the at least one data storage device, the standby controller including message and data buffers (e.g. memory 114/116) for storing the messages and data, whereby the host bus functions as an inter controller-link configured to transfer data and

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message information between the active and standby controllers and wherein upon a failure of the active controller the inter-controller-link provides both data and message transfer within the computing device such that the host CPU can cause the standby controller to access data from the at least one data storage device (Figs. 1, 3 and col. 6 lines 9-67).

As to claim 25, DeKoning teaches a data array system for providing a host computer device having a host bus redundant access to a data storage device, comprising: an active controller sub-system (118.1) linked directly to the host bus (154) and the data storage device (108), the active controller sub-system (118.2) including a messaging mechanism (CPU 112 and associated circuitry) for transmitting messages and data over the host bus; and a standby controller sub-system linked directly to the host bus and the data storage device, the standby controller sub-system including message and data buffers (e.g. memory 114/116) for storing the messages and data, whereby the host bus functions as a redundant inter-controller-link such that upon failure of either of the active and standby controller sub-systems the host computing device maintains access to the data storage device (Figs. 1, 3 and col. 6 lines 9-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-3 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning et al. (5,975,738) (hereinafter DeKoning) in view of Surugucchi et al. (6,094,699) (hereinafter Surugucchi).

As to claims 2-3, and 20, the argument above for claim 1 applies. However, DeKoning does not explicitly disclose the host bus is a peripheral component interconnect (PCI) bus and the active and the standby controllers are PCI-compliant devices. Surugucchi teaches PCI bus connecting PCI-compliant RAID controllers (col. 1 lines 19-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement PCI bus and PCI-compliant RAID controllers as taught by Surugucchi in the system of DeKoning because PCI bus provides high performance, and also this configuration is advantageous for improving the speed in accessing peripheral devices (col. 1 lines 26-27).

Allowable Subject Matter

5. Claims 9-13 and 21-23 are allowed.

6. Claims 4-8 and 15-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 9-13 includes the limitation of the standby controller detecting the command/reply queue for a next message from the active controller and processing the

receiving message, wherein the active controller and the standby controller communicate using the host bus which functions as inter controller link, which is not taught by the prior art of record in the combination as disclosed and claimed. The examiner interpreted the claims in light of the specification and further in view of Applicant's persuasive argument that the controllers of DeKoning (US Patent 6,085,333) communicate using a distinct shared bus 156, not the host bus 154 (page 13 of the Remarks).

Claims 21-23 include the limitation of the active controller writing data to the interrupt range of the standby controller, the interrupt range being specified by the standby controller, wherein the active controller and the standby controller communicate using the host bus which functions as inter controller link, which is not taught by the prior art of record in the combination as disclosed and claimed. The examiner interpreted the claims in light of the specification and further in view of Applicant's persuasive argument that the controllers of DeKoning (US Patent 6,085,333) communicate using a distinct shared bus 156, not the host bus 154 (page 14 of the Remarks).

Claims 4-8 include the limitation of the active controller writes the signal identifier to the standby queue to provide processing information for the transmitted messages and data, wherein the active controller and the standby controller communicate using the host bus which functions as inter controller link, which is not taught by the prior art of record in the combination as disclosed and claimed. The examiner interpreted the claims in light of the specification and further in view of Applicant's persuasive argument that the controllers of DeKoning (US Patent 6,085,333) communicate using a distinct shared bus 156, not the host bus 154 (pages 12-13 of the Remarks).

Claims 15-16 include the limitation of the active controller transfers messages to the message buffer of the standby controller and writes to the command/reply queue to indicate the transmittal of the messages, wherein the active controller and the standby controller communicate using the host bus which functions as inter controller link, which is not taught by the prior art of record in the combination as disclosed and claimed. The examiner interpreted the claims in light of the specification and further in view of Applicant's persuasive argument that the controllers of DeKoning (US Patent 6,085,333) communicate using a distinct shared bus 156, not the host bus 154 (pages 13-14 of the Remarks).

Claims 17-19 include the limitation of the active controller transfers data corresponding the message over the host bus to the data buffer in the standby controller, wherein the active controller and the standby controller communicate using the host bus which functions as inter controller link, which is not shown by the prior art of record in the combination as disclosed and claimed. The examiner interpreted the claims in light of the specification and further in view of Applicant's persuasive argument that the controllers of DeKoning (US Patent 6,085,333) communicate using a distinct shared bus 156, not the host bus 154 (pages 13-14 of the Remarks).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, as the art discloses redundant controllers communication over shared host bus:

US Patent 5,896,492 Chong, Jr.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trisha Vu whose telephone number is 571-272-3643. The examiner can normally be reached on Mon-Thur and alternate Fri 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on 571-272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Imas Pang

Khach Dang
Primary Examiner

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Trisha Vu
Trisha Vu
Examiner
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